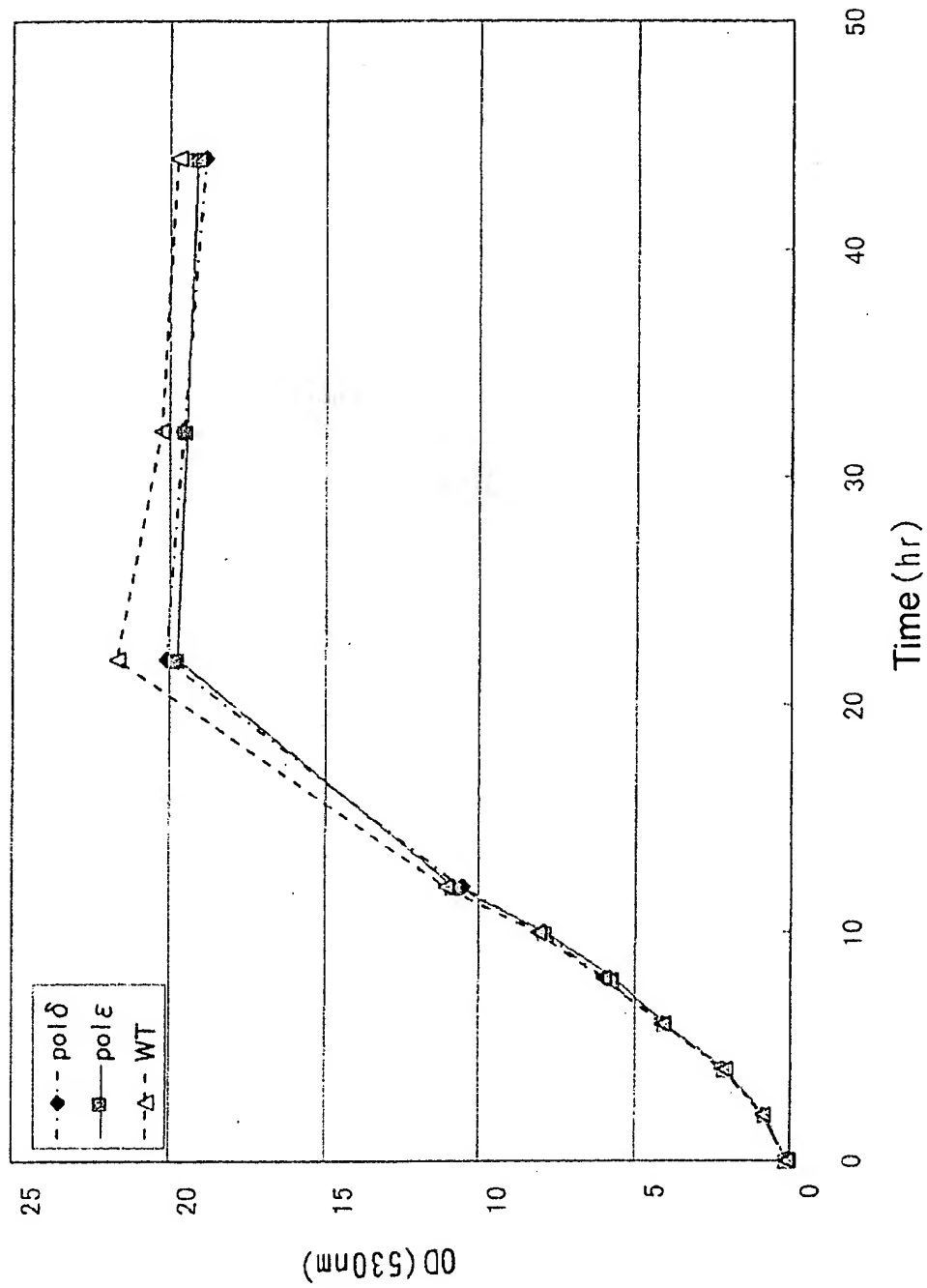


FIG.1

Fig. 1 Growth curve of mutant strain



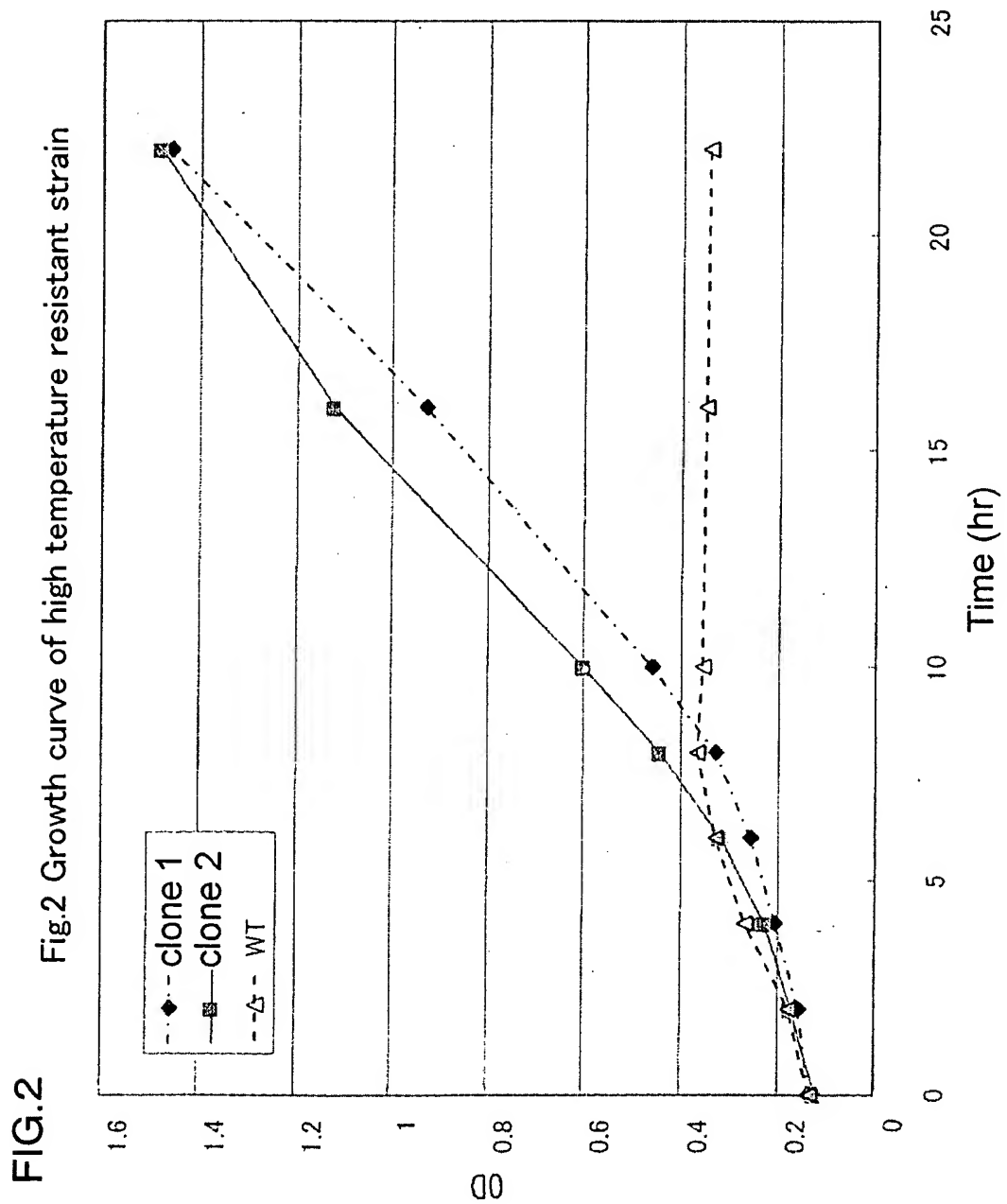
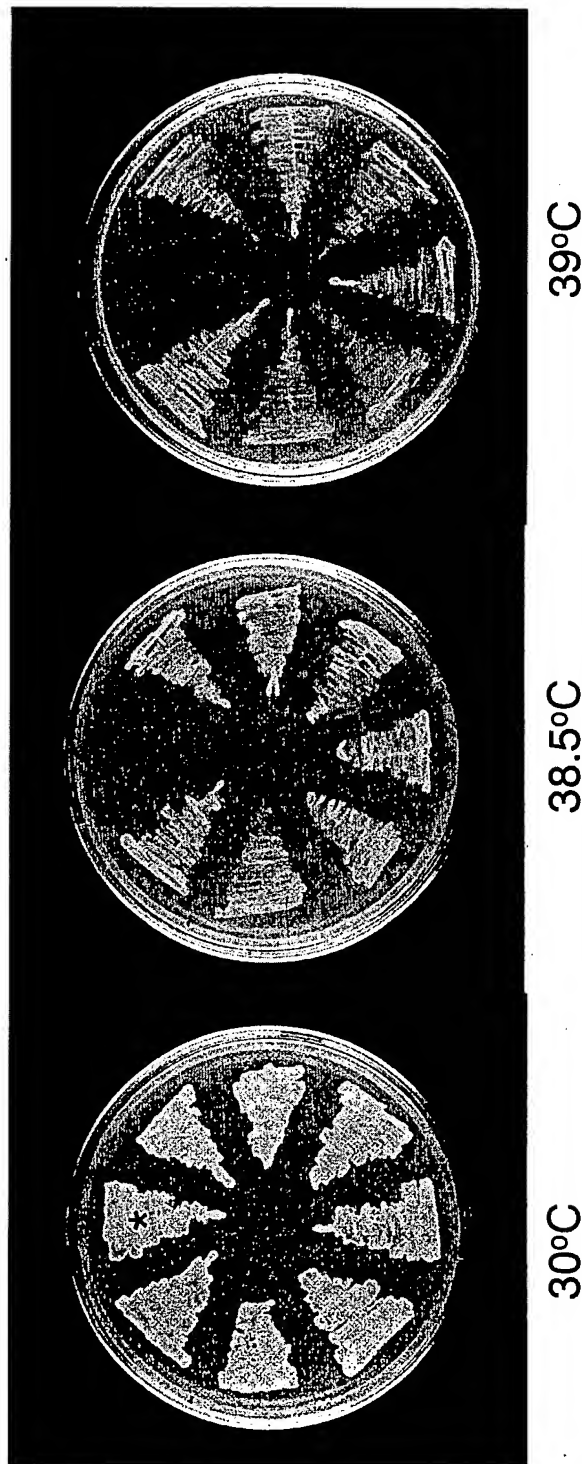


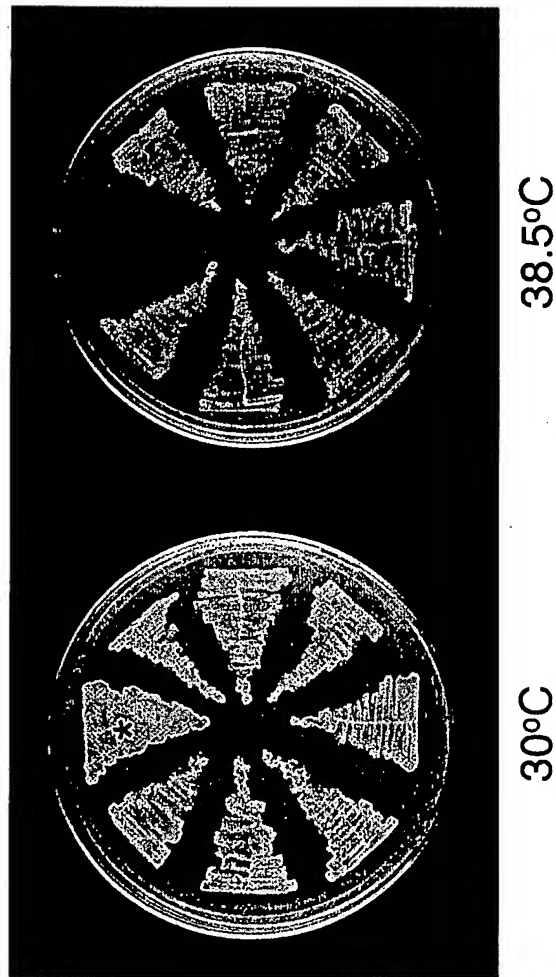
FIG.3A

Isolation of high temperature resistant strain (1)



**FIG.3B**

Isolation of high temperature resistant strain (2)



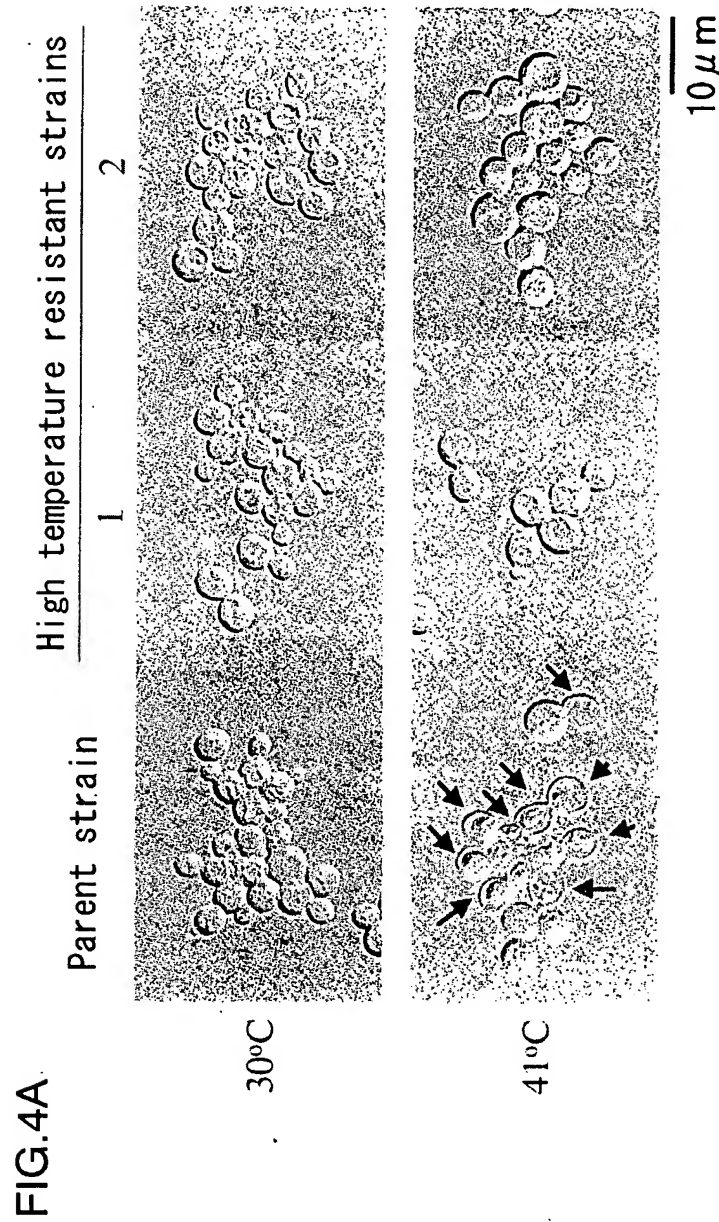


FIG.4B

Growth of high temperature resistant strain (41°C)

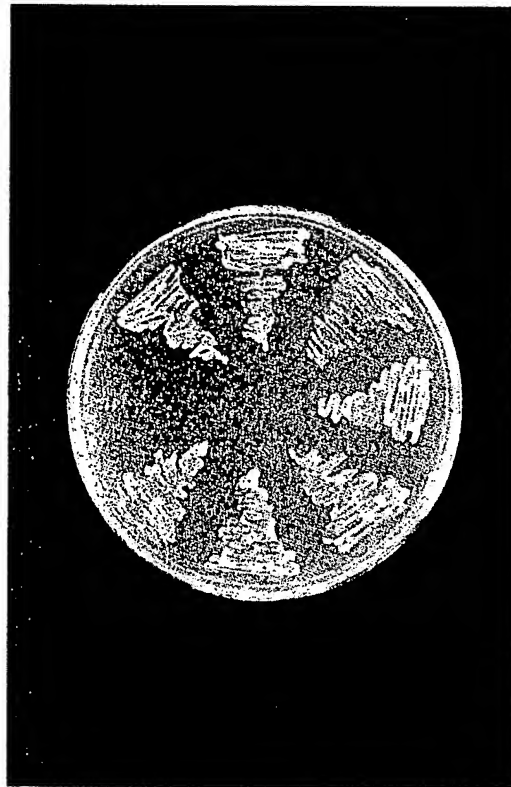
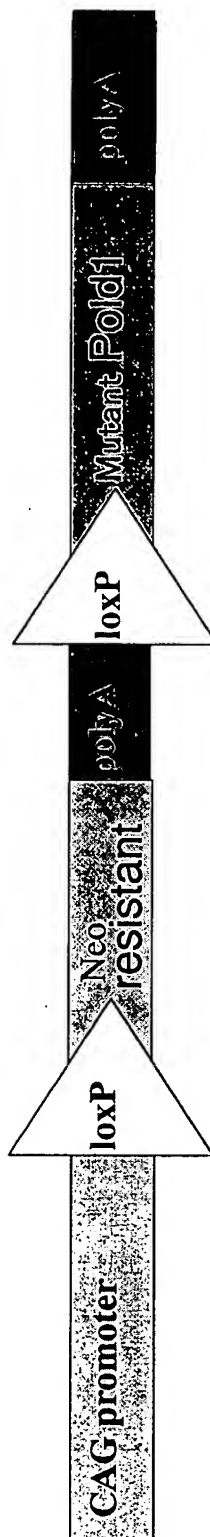


Fig.9

Transgenic mouse #1



Transgenic mouse #2



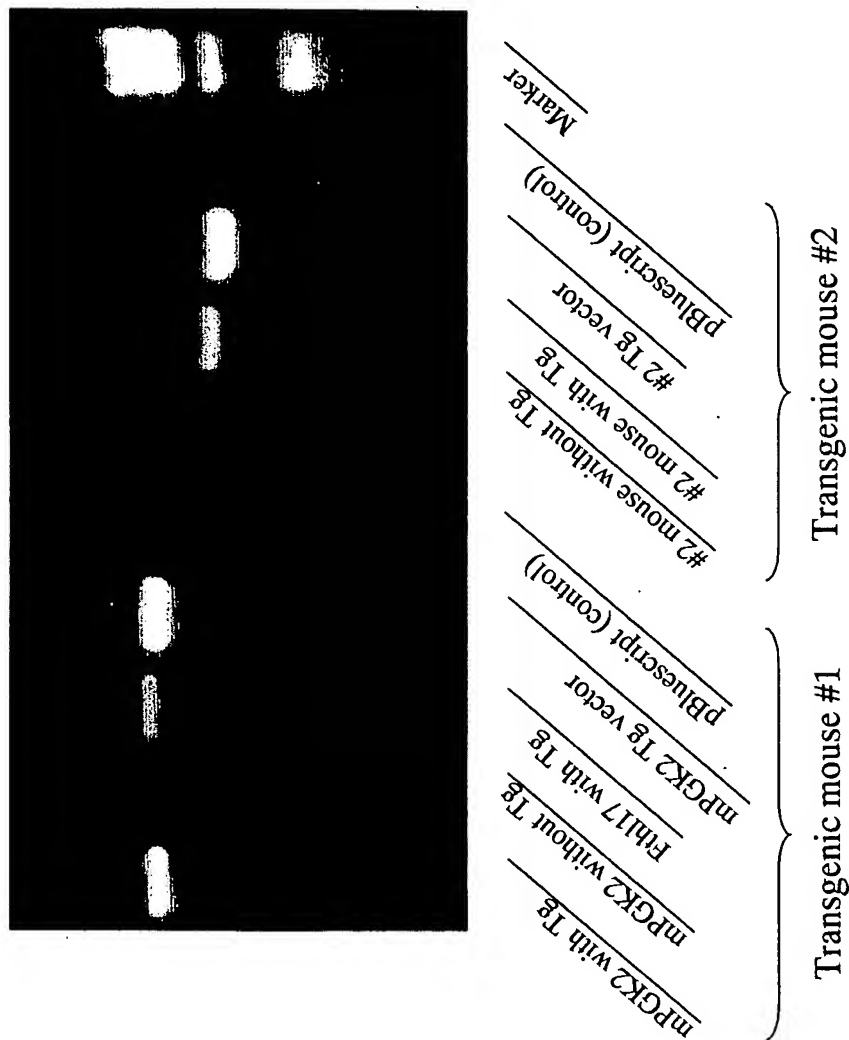
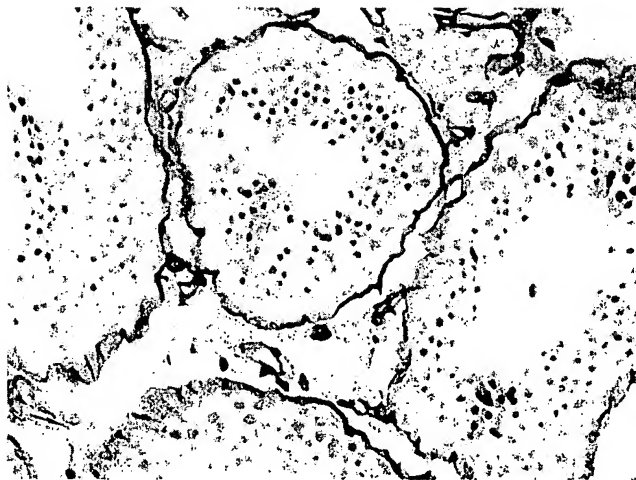


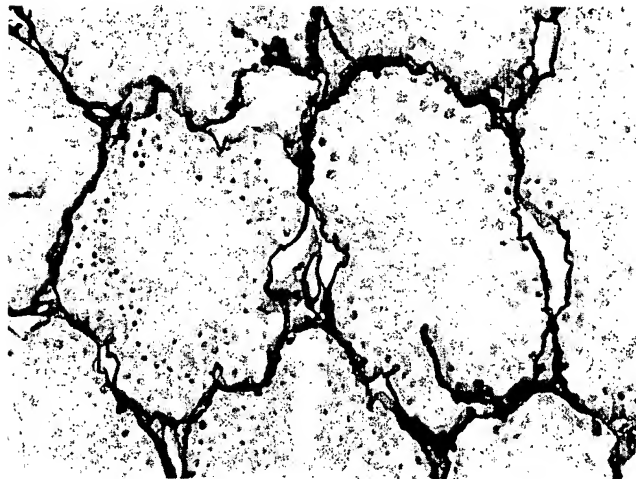
Fig.10



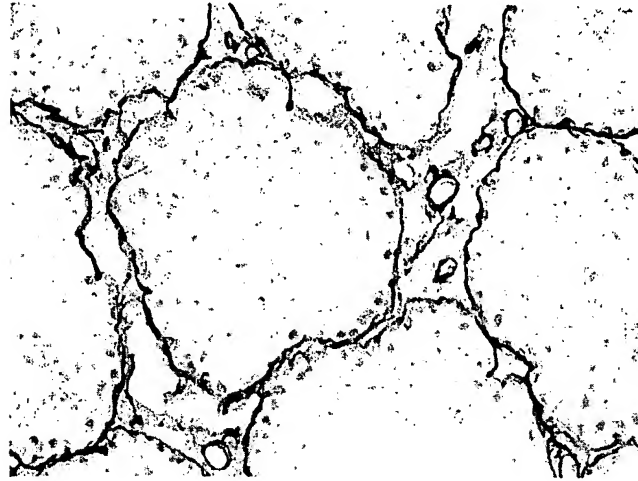
Fig.11



(a) mPGK2

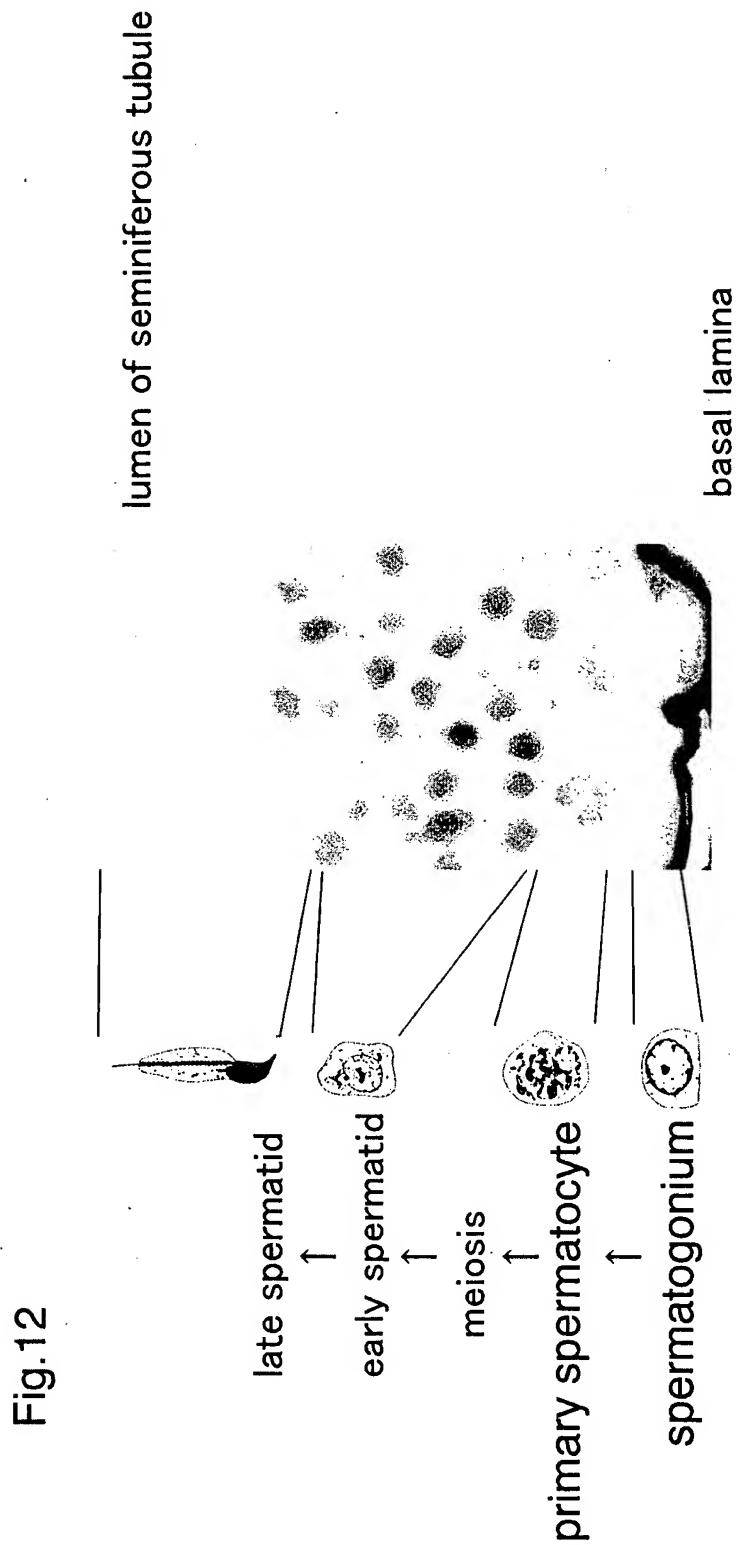


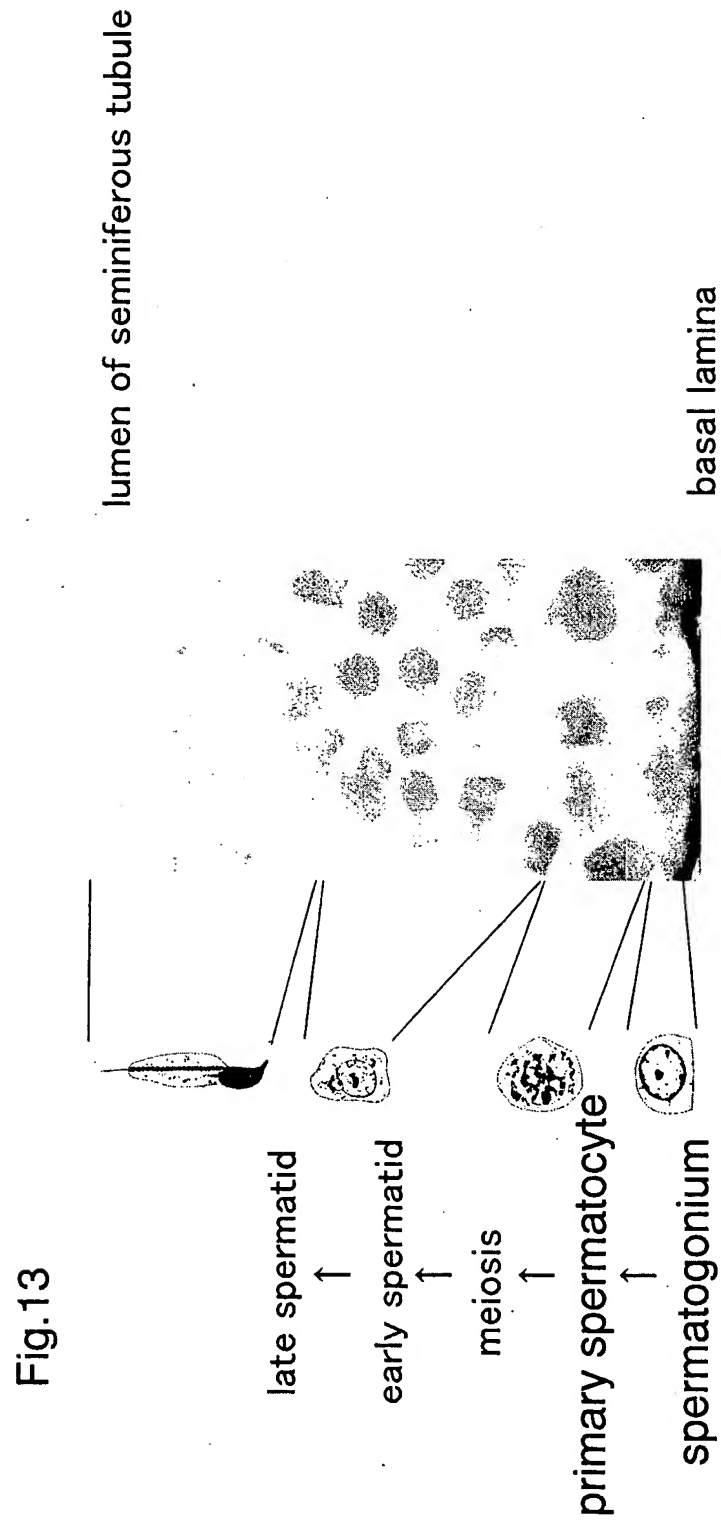
(b) Fthl17



(c) control

50μm





NEO001-1

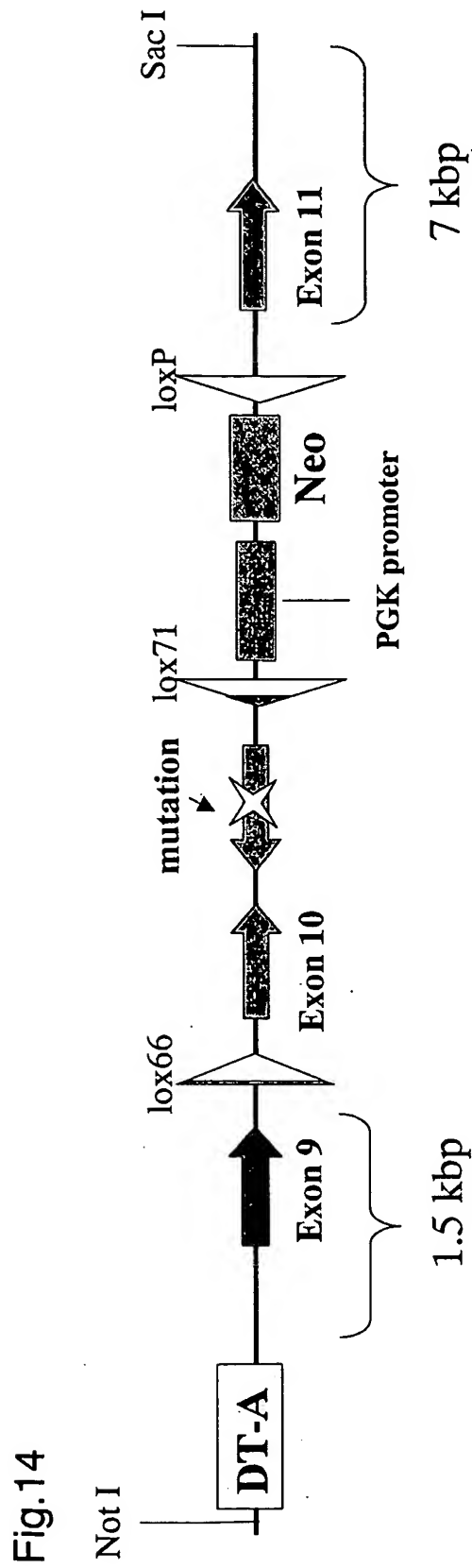


Fig. 15

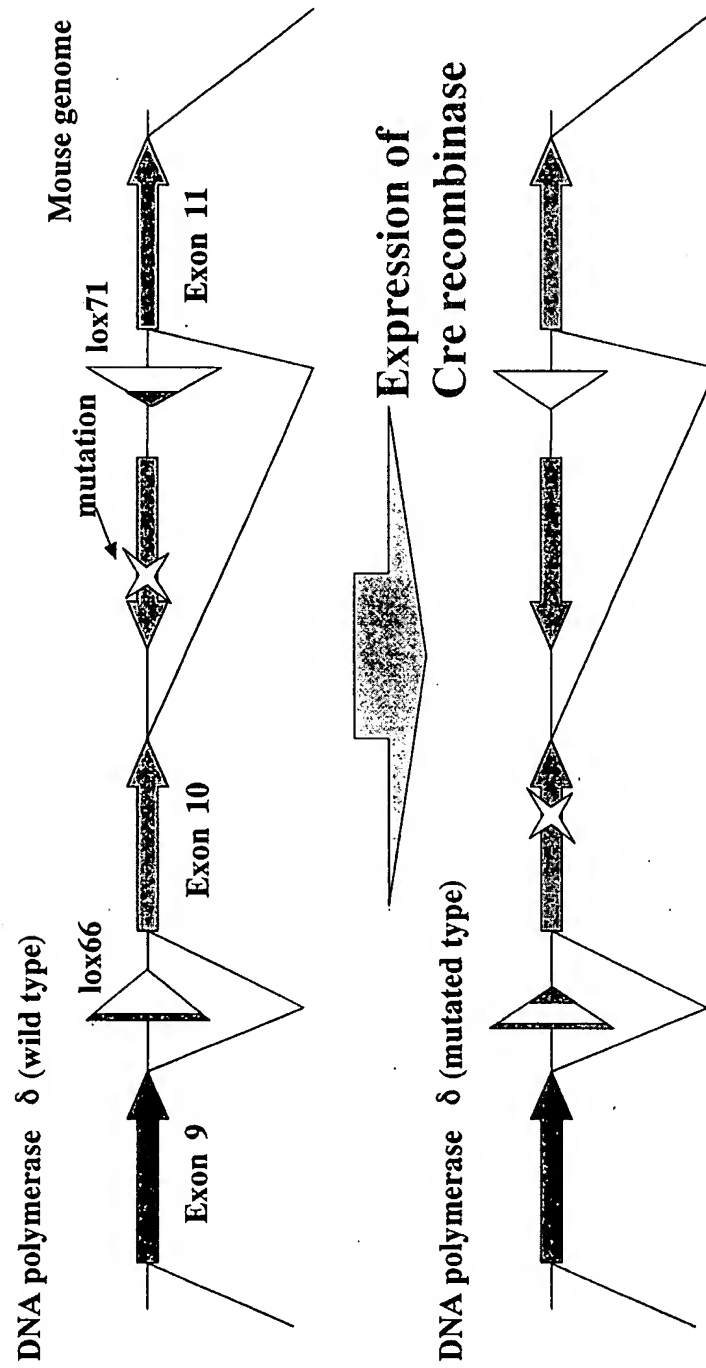


Fig.16

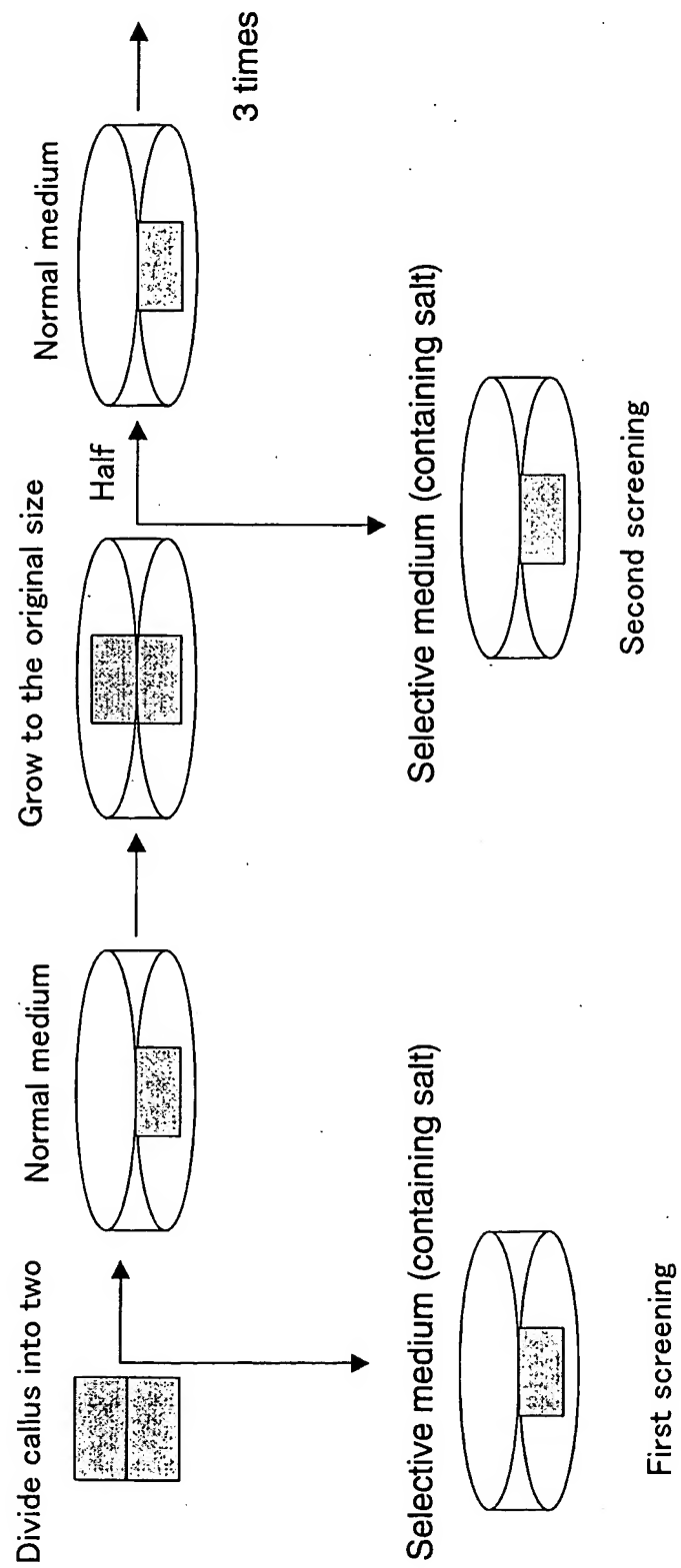
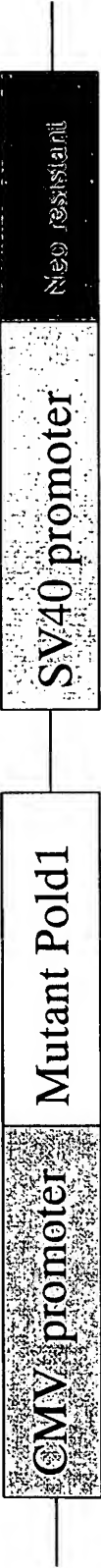


Fig.17

Overexpression of mutant Pold1



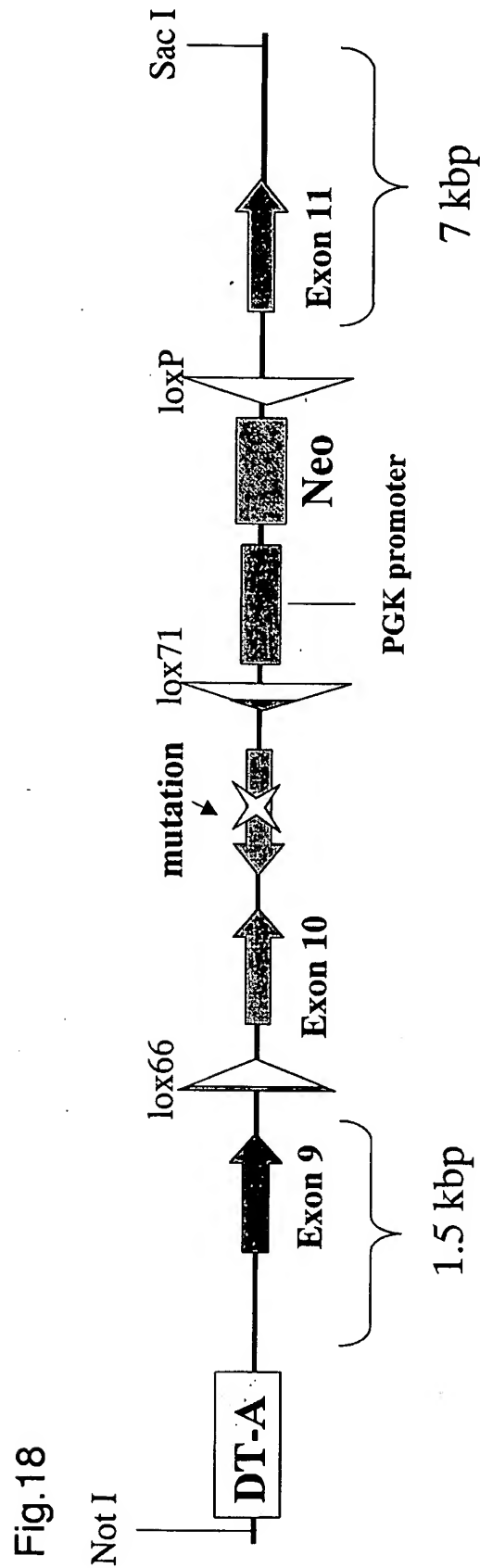
Control using wild type Pold1



Control using EGFP gene



NEO001-1





**Title: Method and System for Rapidly Conferring a  
Desired Trait to an Organism  
Inventor: Mitsuru Furusawa; Serial No. 10/810, 486  
REPLACEMENT SHEET**

SEQ ID NO:90  
3684 nucleotides  
DNA  
Arabidopsis thaliana

CDS  
(501)..(557)

(689)..(818)

(1008)..(1114)

(1194)..(1320)

(1469)..(1576)

(1671)..(1786)

(1858)..(1941)

(2040)..(2108)

(2198)..(2269)

(2352)..(2443)

(2545)..(2672)

(2772)..(2873)

(2965)..(3032)

(3122)..(3181)

agcgattcct tagcagaaag gcgctccatt tctctggcgt aaaccaaagg agatccttga	60
actgtttcct gcaccattgc tcttaaaacc cttctccggc acgaattctt ccaaccctgc	120
ttcaccaccg gaacattgag acaaaatctc gacggtgacg ctgaggttga aaaaaccaat	180
cgaaccgcag acgtaccagg aaccgaacca tgtatcaacg ccattgaaga agaagaagaa	240
gaagaagggtg aaaaacgaaa gattgagaat ttgtttgctt tgagcaacca aacctcagga	300

**FIG. 19A**

**Inventor:** Mitsuru Furusawa; **Serial No.** 10/810, 486

FIG. 19B

**Title:** Method and System for Rapidly Conferring a  
Desired Trait to an Organism  
**Inventor:** Mitsuru Furusawa; **Serial No.** 10/810, 486

**REPLACEMENT SHEET**

<p>cac atg aag ctt aaa cct tgt gtt ctc gat gaa tat tct aaa gag His Met Lys Leu Lys Pro Cys Val Leu Asp Glu Tyr Ser Lys Glu 85 90 95</p>	1114
<p>gttggttttt attaacctct actgtttttt tgagctatgt ctatgctgaa tcaatctgag tatatttaac ataatgcag agg tca gtt act ccg ctt gtt aaa cca cat aac Arg Ser Val Thr Pro Leu Val Lys Pro His Asn 100 105</p>	1174 1226
<p>ttt atg cat cct gat gat aat ctg atc ctc gaa gac gag agt ggg aga Phe Met His Pro Asp Asp Asn Leu Ile Leu Glu Asp Glu Ser Gly Arg 110 115 120 125</p>	1274
<p>gtt aag ctt gct ggt tcc gca ctt tca cct gcg att tat gtg aca g Val Lys Leu Ala Gly Ser Ala Leu Ser Pro Ala Ile Tyr Val Thr 130 135 140</p>	1320
<p>gtattgcaaa tgggttctta ctgtttttac tgtatgattt tttccttctt tacaatgtgg caaactcttag agattttgat caagctttcc tctcttaaaa gatgggttct ttaagaaaat taacgttgaa gcctcccgtag cattgttag gt gtt gtt gtt gca ctg cat ggg Gly Val Val Val Ala Leu His Gly 145</p>	1380 1440 1491
<p>aag gaa act aat gct ggt gaa ttc ttt gtt gag gat gta cta gaa gct Lys Glu Thr Asn Ala Gly Glu Phe Phe Val Glu Asp Val Leu Glu Ala 150 155 160</p>	1539
<p>ggt tta cca cct cag att gag cgg cct atc gat cta c gtaagtctag Gly Leu Pro Pro Gln Ile Glu Arg Pro Ile Asp Leu 165 170 175</p>	1586
<p>ctatgttctc ttccttttgc taacctcatg gctcaatcat ttctataagc aatctctcat gatacatcca tattgcattct gcag ag gaa gat aaa tat gtc gtg tta ttg Gln Glu Asp Lys Tyr Val Val Leu Leu 180 185</p>	1646 1696
<p>tcg ggc ctt tgt att gga agc aaa tcg gct aat ccc ctg cag ttt cag Ser Gly Leu Cys Ile Gly Ser Lys Ser Ala Asn Pro Leu Gln Phe Gln 190 195 200</p>	1744

***FIG. 19C***

**Title:** Method and System for Rapidly Conferring a  
Desired Trait to an Organism  
**Inventor:** Mitsuru Furusawa; **Serial No.** 10/810, 486  
**REPLACEMENT SHEET**

ctt ctt gtt gac cat ata act ggg cat ctc gga gat gag gag Leu Leu Val Asp His Ile Thr Gly His Leu Gly Asp Glu Glu 205 210 215	1786
gttcaaactc cttaacttgc aggttggtca acatatttct ttccttaatt tatactttat 220 225	1846
ggtttgaaca g gaa caa ggc ctt gca gca cag ata gtt cat gta gta att Glu Gln Gly Leu Ala Ala Gln Ile Val His Val Val Ile 220 225	1896
gct gga aac tct ttt gaa ttt ccc cgc aaa ctc att aat ggc cag Ala Gly Asn Ser Phe Glu Phe Pro Arg Lys Leu Ile Asn Gly Gln 230 235 240	1941
gtacttataa cttttgttgc tgatatattc tcagatacag ttccagtaat tatctgcccc 245	2001
agttatgtct tatgatcttt attggttgat cttttag aac ttg gcc tcg aaa gat Asn Leu Ala Ser Lys Asp 245	2057
caa tcg aca ctg tat gag ccc atc aaa gag ctt gat atc atg tta agc Gln Ser Thr Leu Tyr Glu Pro Ile Lys Glu Leu Asp Ile Met Leu Ser 250 255 260 265	2105
cag gtcagttaac tggatctacg tgtgtgttat cgatatctat tgagatgaaa Gln	2158
gttcaaactc ctgttttttt ttttgtggat tgttttttag ata gct gca gga gtt Ile Ala Ala Gly Val 270	2212
tca gta gat atc atg cca ggc acg aat gat cca gct aac ttc gca ttg Ser Val Asp Ile Met Pro Gly Thr Asn Asp Pro Ala Asn Phe Ala Leu 275 280 285	2260
cct cag cag gtctgcaa atcataagaaa cattcaaaat cccgcatttt Pro Gln Gln 290	2309
gtatcgataa ctctgattca taggcccttc tcttttgttc ag cct ctg aat aga Pro Leu Asn Arg	2363

*FIG. 19D*

**Inventor: Mitsuru Furusawa: Serial No. 10/810, 486**

Cys Leu Phe Pro Gly Ser Ser Pro Tyr Asn Thr Phe Arg Ser Cys Thr

Asn Pro His Ser Phe Asp Val Asp Asn Ile Arg

**Symptoms:** Irritability; moodiness; lack of interest in activities; loss of appetite

Phe Leu Gly Thr Ser Gly Gln Asn Ile Asp

Asp Leu Gly Lys Tyr Ser Glu Ala Lys Ser Lys Leu Asp Phe Val Glu

Arg Thr Leu Arg Trp Arg His Leu Ala Pro Thr Ala Pro Asn Thr Leu

\_\_\_\_\_

Gly Cys Tyr Pro Phe

Thr Asp Arg Asp Pro Phe Leu Ile Glu Thr Cys Pro His Val Tyr Phe

Val Gly Asn Gln Asp Lys Tyr Asp Asn Arg Leu Ile Lys

.....

Gly Ser Glu Gly Gln Leu Val Arg Leu Ile

*FIG. 19E*

**Title:** Method and System for Rapidly Conferring a  
Desired Trait to an Organism  
**Inventor:** Mitsuru Furusawa; **Serial No.** 10/810, 486

**REPLACEMENT SHEET**

tgc att cct aag ttc tgt gag acc ggt att gct gtt gcg gtgagtttaa	3042
Cys Ile Pro Lys Phe Cys Glu Thr Gly Ile Ala Val Ala	
410                      415                      420	
aatttgagca gaatttgaga ccatttacc ccatagattg cagattctaa atctcaaaat	3102
caccatgtct atttcgcag gtg aac cta aga aat ctg gaa tgt cac act tta	3154
Val Asn Leu Arg Asn Leu Glu Cys His Thr Leu	
425                      430	
agc ttt agc act cag ata aac caa tca taacattgag ttgctacttt	3201
Ser Phe Ser Thr Gln Ile Asn Gln Ser	
435                      440	
ggtagattat ttctgtctt gaagatgtaa tgttgagctt tttcagtaac acactcctat	3261
gttctaacca aatgtttgtt aaaaatcctt tttcttgagt ggaacttcca aatctttgga	3321
tatattgga atgctcattg ttttgccta attttctaaa aatctcgaca cgagttctta	3381
ggtagtcaca taaaggacaa aaagggccga ccagatagtg tcgtggctgt tggtcagaag	3441
aacgtgaaaa gactgcaaaa ataatcttaa aaaaagcaac aagtgcacag aatctcatgc	3501
aaatgtctct ctctctcttc tcaacggcta tatccatcca cacttattac attataaaat	3561
taattaaatg caataatga acgcattata ttctccaacg gtccattttc ccgcattttc	3621
ctaacccttc ctttataacg caaaacagtt tcattttcta cacttaacac tttaatcctc	3681
tct	3684

*FIG. 19F*

**Title: Method and System for Rapidly Conferring a  
Desired Trait to an Organism  
Inventor: Mitsuru Furusawa; Serial No. 10/810, 486  
REPLACEMENT SHEET**

SEQ ID NO:92  
3684 nucleotides  
DNA  
Arabidopsis thaliana

CDS  
(501)..(557)

(689)..(818)

(1008)..(1114)

(1194)..(1320)

(1469)..(1576)

(1671)..(1786)

(1858)..(1941)

(2040)..(2108)

(2198)..(2269)

(2352)..(2443)

(2545)..(2672)

(2772)..(2873)

(2965)..(3032)

(3122)..(3181)

agcgattcct tagcagaaag gcgctccatt tctctggcgt aaaccaaagg agatccttga	60
actgtttcct gcaccattgc tcttaaaacc cttctccggc acgaattctt ccaaccctgc	120
ttcaccaccg gaacattgag acaaaatctc gacggtgacg ctgaggttga aaaaaccaat	180
cgaaccgcag acgtaccagg aaccgaacca tgtatcaacg ccattgaaga agaagaagaa	240
gaagaagggtg aaaaacgaaa gattgagaat ttgtttgctt tgagcaacca aacctcagga	300

***FIG. 20A***

**Inventor: Mitsuru Furusawa: Serial No. 10/810, 486**

aaaaagagtt aaggtgggag tgtctggttc aaccggttta tatccggttc aaattaaacc 360

tcttacagtt aaccgggttt tgtgtttggt tcgattgttc ataaaagaaa gaagactctt 420

gtcgtcgatt agtccaaag ttgaaagtg aaaccttttc tcagaatttt ctgctcagtt 480

ctgagttttt ttttccgcc atg gaa atc gac tcc gag aaa att cac gaa agg : 533

Met Glu Ile Asp Ser Glu Lys Ile His Glu Arg

1                      5                      10

aaq caa tcc gat tac aat tcg ctg gtacqaactc tattacttta tcgacttgta 587

Lys Gln Ser Asp Tyr Asn Ser Leu

15

gtgaaagaca aatgtaatca ttctggttgg tgactgtttc tacttataag tgtacgggct 647

agqgtttgtt atctgattct gaqgtttttgc aattqaagca g gat gaq aga ttc gag 703

Asp Glu Arg Phe Glu

20

ata caq aaq qaq atq tac aqa qqt caq caa tac aqt caq att tac ttt 751

Ile Gln Lys Glu Met Tyr Arg Gly Gln Gln Tyr Ser Gln Ile Tyr Phe

25                      30                      35                      40

qct cgt ctt cat ctc atg aqa aca ctt ctc tac tct ctt qct cct act 799

Ala Arg Leu His Leu Met Arg Thr Leu Leu Tyr Ser Leu Ala Pro Thr

45

50

55

tgg aaa tct cat ttg cct g gtcagtgcct ttgtttctct catatttagc 848

Trp Lys Ser His Leu Pro

60

acaacaacga agagcagttt ttgagaattt tcttqqgta gatataatta ggtgaaatca 908

gtgattttta qggatttttg ctatcttatg gattacaqtt qagaaaqatt gctagtattg 968

tttaaattat agatctqaat qtqaatttca tttttcag tg tgt aag gtt ttg 1021

Val Cys Lys Val Leu

65

qqa ctt qaa aaa qqa aaa qaa tgc ata att qtq qqa acc ttg ttc aaa 1069

Gly Leu Glu Lys Gly Lys Glu Cys Ile Ile Val Gly Thr Leu Phe Lys

70

75

80

FIG. 20B



## REPLACEMENT SHEET

tcg ggc ctt tgt att gga agc aaa tcg gct aat ccc ctg cag ttt cag 1744  
Ser Gly Leu Cys Ile Gly Ser Lys Ser Ala Asn Pro Leu Gln Phe Gln  
190 195 200

**Title: Method and System for Rapidly Conferring a  
Desired Trait to an Organism  
Inventor: Mitsuru Furusawa; Serial No. 10/810, 486  
REPLACEMENT SHEET**

<p>ctt ctt gtt gac cat ata act ggg cat ctc gga gat gag gag  Leu Leu Val Asp His Ile Thr Gly His Leu Gly Asp Glu Glu  205 210 215</p>	1786
<p>gttcaaactc cttaacttgc aggttgttca acatatttct ttccttaatt tatactttat  ggtttgaaca g gaa caa ggc ctt gca gca cag ata gtt cat gta gta att  Glu Gln Gly Leu Ala Ala Gln Ile Val His Val Val Ile  220 225</p>	1846  1896
<p>gct gga aac tct ttt gaa ttt ccc cgc aaa ctc att aat ggc cag  Ala Gly Asn Ser Phe Glu Phe Pro Arg Lys Leu Ile Asn Gly Gln  230 235 240</p>	1941
<p>gtacttataa cttttgttgc tgatatattc tcagatacag ttccagtaat tatctgcccc  agttatgtct tatgatcttt attggttgat cttttag aac ttg gcc tcg aaa gat  Asn Leu Ala Ser Lys Asp  245</p>	2001  2057
<p>caa tcg aca ctg tat gag ccc atc aaa gag ctt gat atc atg tta agc  Gln Ser Thr Leu Tyr Glu Pro Ile Lys Glu Leu Asp Ile Met Leu Ser  250 255 260 265</p>	2105
<p>cag gtcagttaac tggatctacg tgtgtgttat cgatatctat tgagatgaaa  Gln</p>	2158
<p>gttcaaactc ctgttttttt ttttgtggat tgtttttag ata gct gca gga gtt  Ile Ala Ala Gly Val  270</p>	2212
<p>tca gta gat atc atg cca ggc acg aat gat cca gct aac ttc gca ttg  Ser Val Asp Ile Met Pro Gly Thr Asn Asp Pro Ala Asn Phe Ala Leu  275 280 285</p>	2260
<p>cct cag cag gtctgcaaat acataagaaa cattcaaaat cccgcatttt  Pro Gln Gln  290</p>	2309
<p>gtatcgataa ctctgattca taggcccttc tcttttgttc ag cct ctg aat aga  Pro Leu Asn Arg</p>	2363

*FIG. 20D*



**Title: Method and System for Rapidly Conferring a  
Desired Trait to an Organism**

**Inventor: Mitsuru Furusawa; Serial No. 10/810, 486**

**REPLACEMENT SHEET**

tgc att cct aag ttc tgt gag acc ggt att gct gtt gcg gtgagtttaa	3042
Cys Ile Pro Lys Phe Cys Glu Thr Gly Ile Ala Val Ala	
410 415 420	
aatttgagca gaatttgaga ccatttaccc tcatagattg cagattctaa atctcaaaat	3102
caccatgtct atttcgcag gtg aac cta aga aat ctg gaa tgt cac act tta	3154
Val Asn Leu Arg Asn Leu Glu Cys His Thr Leu	
425 430	
agc ttt agc act cag ata aac caa tca taacattgag ttgctacttt	3201
Ser Phe Ser Thr Gln Ile Asn Gln Ser	
435 440	
ggtagattat ttctgtctt gaagatgtaa tgttgagctt ttccagtaac acactcctat	3261
gttctaacca aatgtttgtt aaaaatcctt ttcttgagt ggaacttcca aatctttgga	3321
tatattggta atgctcattg tttgtccta attttctaaa aatctcgaca cgagttctta	3381
ggtagtcaca taaaggacaa aaagggccga ccagatagtg tcgtggctcg tggtcagaag	3441
aacgtgaaaa gactgcaaaa ataatcttaa aaaaagcaac aagtgcacag aatctcatgc	3501
aaatgtctct ctctctcttc tcaacggcta tatccatcca cacttattac attataaaat	3561
taattaaatg caataatgta acgcattata ttctccaacg gtccattttc ccgcatttcc	3621
ctaacctttc ctttataacg caaaacagtt tcattctcta cacttaacac tttaatcctc	3681
tct	3684

**FIG. 20F**